June 26, 2003

MEMORANDUM

TO: Mickey Suggs, COE
FROM: Tom Jarrett (Response Comments to Todd Miller)
SUBJECT: Preliminary Comments on the Bogue Inlet Draft Report

Todd Miller (TM): Below are comments from my very preliminary review of the engineering report that was given to the PDT back in April. You encouraged team members to provide some feedback on the report at our last meeting. Please note that many of the Figures in the report are missing (at least on the CD we were given).

Tom Jarrett (TJ): Responses to comments provided by Todd Miller are provided in bold following each comment.

1. (TM) Section 2.1: The primary purposes of the project is to protect private property at Bogue Inlet and to provide a source of beach quality sand for beach renourishment. It is not the purpose of the project to create a "stable" channel. The relocated channel will be no more "stable" than the existing channel. Use of this word throughout the document gives the impression that the new channel will be safer and easier to navigate—which it will not except perhaps in the initial months after construction.

(TJ) Response: The use of the word "stable" in the early sections of the report only refers to the hydraulic stability of the channel. A discussion on the horizontal stability of the channel is provided in paragraphs 5.17 to 5.19. This discussion clearly indicates that the channel could migrate to the west or to the east in much the same manner as the existing channel. However, given the propensity of the bar channel to historically migrate to the east, the relocated channel is expected to migrate to the east.

2. (TM) Section 3.10 states that "… In contrast to the net accretion recorded along Bogue Banks, chronic erosion has been the norm along the Bear Island oceanfront since 1973." Actually, according to the Inlet Atlas (1999), Bear Island Oceanfront appeared to accrete near Bogue Inlet between 1974 and 1985. Rapid oceanfront erosion has occurred since 1985. While net erosion ranged from 68 feet at transect 37 to 531 feet at transect 25 since 1973, these erosion rates would be much higher if 1985 were used as the baseline for measurements. The erosion rates would be substantially larger if 1959 was used as the baseline.

(TJ) Response: The Inlet Atlas was prepared by Dr. William J. Cleary and Tara P. Marden. The geomorphic analysis of Bogue Inlet contained in the report, which was also conducted by Dr. Cleary, was considerably more rigorous than the analysis included in the Inlet Atlas. The focus of the geomorphic analysis was on changes in the inlet morphology and changes on the adjacent islands for the period from 1973 to the present, a period of time during which the channel migrated from a central position to a position juxtaposed to the west end of Bogue Banks. Since the proposed channel relocation would reposition the

channel in the same general location and on an alignment similar to that which existed in the mid 1970's, changes in the inlet morphology and the associated changes on the adjacent islands over the period from 1973 to the present were used as a model to predict changes likely to occur once the channel is moved. While other base times could have been used, they would not be representative of changes associated with a centrally located channel.

3. (TM) Section 3.17 states that "…The eastward migration of the ebb channel and the attendant morphologic changes in the inlet system has not only controlled the shoreline change patterns along Bogue Banks, but concurrently they have played a significant role in the Bear Island oceanfront erosion…. The data show there has been a net shoreline loss along the majority of Bear Island. The greatest losses have occurred since the late 1980s when the ebb delta and the inlet throat began to assume their current morphologic identities…The complex interaction of the above variables combined to produce a reconfigured barrier that was increasingly exposed to increased wave activity and hence continued shoreline recession." If the channel is moved back to the west (and happens to continue to migrate to the west after it is moved), what will be the impact on Bogue Banks oceanfront? The report states that the entire shoreline of Bear Island (approximately 3 miles) has been impacted by the movement of the channel in Bogue Inlet. If that is true, what is the basis for determining that a much smaller reach of Bogue Banks will be impacted by this project? What are the chances that the extent of erosion now occurring on Bear Island will, as a result of this project, begin to take place on Bogue Banks? Since no estimates of future shoreline changes can be precise, please provide upper and lower estimates of shoreline changes and probabilities of such changes occurring.

(TJ) Response: The analysis of shoreline changes on Bogue Banks and Bear Island included 7,500 feet of shoreline east and west of the inlet respectively. Predictions of average and possible maximum shoreline changes on both islands within these 7,500-foot sections are provided in paragraphs 3.25 to 3.29. Also included are estimates of the volumetric changes associated with the shoreline adjustments and estimated time periods for these shoreline adjustments to occur. No predictions were made for Bear Island beyond the 7,500-foot section included in the analysis. Also, there is no mathematical basis for assigning probabilities to the predicted average and maximum shoreline adjustments.

4. (TM) Section 3.18 documents shoreline changes beginning in 1976 for Dudley's Island. During this period of time, the inlet channel location shifted from the middle of the inlet to its current easterly location. Between 1938 and 1976, the inlet channel shifted back and forth from the western side to the middle of the inlet. Photos in the Inlet Atlas seem to show rapid shoreline erosion on Dudley Island's prior to 1976. Figure 3.22 should include much more historical data (at least back to 1938) so we can getting a longer term perspective of the impact of the channel's location of erosion rates on Dudley Island. Without this additional data, there is no basis to conclude that the rapid erosion of Dudley Island shorelines is "…primarily due to the eastward migration of the ebb channel; the attendant spit growth along the Bogue Banks shoulder, and the consequent migration of the Eastern Channel toward Dudley

Island." The time period examined to draw that conclusion provides no other inlet channel configurations upon which to compare erosion rate impacts on Dudley Island.

(TJ) Response: Of the six aerial photos included in the Inlet Atlas, only the 1938, 1974, and 1996 photos include coverage of Dudley Island. Cursory examination of these aerial photos does not support the conclusion that Dudley Island was eroding prior to 1974. While the morphology of the inlet changed dramatically between 1938 and 1974, particularly with respect to the extend of the middle ground shoal fronting Dudley Island, the south shoreline of Dudley Island actually appears to have accreted between 1938 and 1974. The analysis of changes in Dudley Island since 1976 included in the report clearly demonstrates that major erosion at transects 2 through 5 on Dudley Island began around 1984, which corresponds to the time when the Bogue Banks sand spit became fully developed (see Figure 3.23 in the report).

5. (TM) There is no discussion about what relationships may exist, if any, between Bogue Inlet, Bear Inlet, and Beaufort Inlet. All three inlets influence the tidal exchanges in Bogue Sound, the White Oak River, and the waters behind Bear Island. While the location of Bear Inlet has been relatively stable, its width has ranged from 300 meters in 1956 to 780 meters in 1938. Does the width of Bear Inlet have any influence over the width of Bogue Inlet? Photos in the Inlet Atlas make it appear that when Bear Inlet is wide, Bogue Inlet narrows, and vice versa. Is there any relationship between these two inlets? If there is a relationship, how does this relationship effect oceanfront erosion rates on Bear Island and Bogue Banks? In addition, has the recent deepening of Beaufort Inlet had any impact on the tidal exchanges through Bogue Inlet? If so, what effect would these changes have on the width of Bogue Inlet, and future projections of inlet changes based upon historical data?

(TJ) Response: The relocation of the Bogue Inlet ebb tide channel would not change the tidal exchange or tidal prism of Bogue Inlet; therefore, there would not be any impact on tidal flow through Bear Inlet. If there is a relationship between the size of Bear Inlet and Bogue Inlet, simply moving the channel to a more central location would not impact this relationship. If tidal flow through Bogue Inlet was impacted by the deepening of Beaufort Inlet in 1994, this change would have already been manifest in the size or cross-sectional area of Bogue Inlet. However, changes in Beaufort Inlet probably did not impact Bogue Inlet as the nodal point of tidal flow through Beaufort Inlet, i.e., the point in Bogue Sound where tidal flow through Beaufort Inlet and Bogue Inlet meet, is probably located somewhere between Sanders Creek and Gales Creek. The approximate location of the nodal point was based on the speed of propagation of the tidal wave in Bogue Sound.

6. (TM) Section 3.25 and subsequent Sections discuss shoreline adjustments that are predicted to occur on Bogue Banks and Bear Island. The accuracy of these predictions are crucial to whether this project is highly successful or a colossal and very expensive failure. As requested above, additional historical data on shoreline changes at least dating back to 1938 are necessary to fully understand the amount of shoreline change that might potentially occur when the inlet channel is relocated. If

Bogue Inlet, Bear Inlet, and Beaufort Inlet do interact as well, changes in those inlet systems need to be factored into any future predictions about Bogue Inlet. If oceanfront erosion rates on Bear Island were measured beginning in 1959 they would be substantially greater than what is reported to have occurred since 1974. Those rates would also increase substantially if the shoreline as it was positioned in 1985 is used as the baseline for measurements. The conclusion that erosion on Bogue Banks after the channel is relocated will follow a similar pattern to the erosion that has occurred on Bear Island in the past decade is probably correct—but the magnitude of erosion that has occurred on Bear Island seems to be significantly under-reported in the Study by using 1973 as the baseline for measurements. In 1999, Cleary predicted in the Inlet Atlas that Bogue Inlet's channel would likely reposition on its own back to the west. The fact that this prediction has not yet occurred underscores the speculative nature of all estimates of future inlet behavior.

(TJ) Response: The purpose of the geomorphic analysis was to evaluate changes associated with moving the channel to a more central location. To do this, the period from 1973 to the present was selected. During this time, the channel migrated from a central position and perpendicular alignment to a position next to Bogue Banks. The changes that occurred to Bogue Banks, Bear Island, and the inlet during this period, or the inverse of these changes, were taken as a model of changes likely to occur if the channel is again reposition to a central location. The basis of the statement that shoreline erosion rates on Bear Island since 1959 have been substantially greater is not clear. The shoreline change rates published by the State of North Carolina Division of Coastal Management through 1992, which covers the period from 1938 to 1992, indicate that Bear Island was accreting during this period.

7. (TM) The report states that the artificial repositioning of the channel to a more central location between Bogue Banks and Bear Island will essentially emulate a major shift in the channel location similar to what occurred during the mid 1970's. In 1974, the inlet channel was located at approximately the location where the proposed new channel is to be located by this project. When the channel was in the middle of the inlet in 1974, there was significant erosion occurring threatening homes on Bogue Banks at the inlet. Could this happen again as a result of this project?

(TJ) Response: The erosion that was occurring on the west end of Bogue Banks in the early to mid 1970's was associated with a secondary flood channel that was positioned immediately adjacent to the west end of the island not the position of the main ebb channel. The proposed channel relocation project includes the closure of the existing channel which should prevent the formation of a secondary flood channel.

8. (TM) Section 3.32 states that "…neither scenario is expected to have a direct negative impact on the integrity of Island 2." There is no factual basis to make this claim. Photos from 1938, 1959, 1962, and 1974 when the channel was located towards the west and then center of the inlet show that the island did not exist during those periods. In all likelihood, island number two will disappear and be replaced either by new islands or become parts of sand spits extending out from either Bear Island or

Bogue Banks. Again, the report needs to use all the data that is available for the inlet and not only data that available since 1973 or later.

(TJ) Response: Island 2 did not exist until 1995/1996. The island appears to be migrating rapidly to the west. Between September 2001 and September 2002, the island appeared to have migrated 1,000 feet to the west. An aerial photo taken by the Corps of Engineers in March 2003 indicated that the island had migrated an additional 600 feet between September 2002 and March 2003. Therefore, over the 18 month period, Island 2 has migrated close to 1,600 feet to the west which represents a rate of approximately 90 feet/month. Should this rate of westerly migration continue, Island 2 will move completely into the Western Channel by March 2004.

9. (TM) Based upon my own observations over the past several months, very coarse shell hash comprises a portion of the western shoreline of Island #1. Would the existence of this shell hash have been predicted by the cores that have been collected? There is also a layer of silt and dark sand along the northern shoreline of Island #2. Would this silt and dark sand have been predicted by the cores that have been collected?

(TJ) Response: The observation of shell on Island 1 and silt on Island 2 is simply due to a process of selective sorting and has nothing to do with the overall characteristics of the material found in the inlet shoals.

10. (TM) Section 5.4. outlines the design of channel cross-section. It states that the shallowest depths in the existing inlet channel are 8 feet as the channel crosses on the ebb tidal delta. On our field trip June 10, the captain reported depths of 4 to 6 feet on the ebb tidal delta one week after the channel had been dredged. Is 8 feet correct or simply the "authorized" depth that is seldom obtained through the existing maintenance dredging that takes place? What is the average actual depth on the channel between times that it is dredged? Please compare the actual size of the existing channel to the one that is proposed by this project, taking into account the planned dredging of shoals that are situated between existing deep water in the inlet itself.

(TJ) Response: The discussion in paragraph 5.4 was only referencing the depths measured by CSE in October 2001 with depths given relative to NGVD. The 8-foot NGVD depth would be equal to a depth of 6.5 feet at mean low water. A detailed discussion of the expected shoaling of the relocated channel is provided in paragraphs 5.26 to 5.45. The recommended channel is only expected to remain at or below 8-feet mean low water (9.5 feet NGVD) 12 months.

11. (TM) Section 6.8 discusses logistics of dike construction. Please outline what will happen to estimates of amount of sand required for the dike, time of construction, etc. if the dredge cannot work without interruptions while the dike is being constructed. For example, if weather forces the dredge to shutdown partway through construction, what type of erosion will occur along the partly built dike, and how much additional

sand might be needed to complete the job? Since sand for the dredging will be obtained after the new channel has been opened, is there a chance that all authorized areas for dredging could be completed prior to obtaining enough sand to build the dike, especially if the job encounters delays due to weather or mechanical breakdowns?

(TJ) Response: Dike construction was conservatively estimated to take 9.5 days based on an average production rate of 900 cy/hr. The actual production rate may approach 1,500 cy/hr in which case the dike could be completed in only 6 days. Accordingly, the estimate implicitly includes 3.5 days of downtime which could be for weather or mechanical problems. Once the new channel connects with the existing channel that swings to the east as it exits past Island 2, enough flow would be established to allow construction of the dike. Material to construct the dike would be obtained exclusively from the area of the middle ground shoal located between the existing channel and Dudley Island.

12. (TM) Section 6.10 concludes that the turbidity standard for tidal saltwater (as well as for SA, SB and ORW waters) will not be violated. This is simply absurd given the nature of this project and the direct disposal of dredge spoil that is proposed into the water column. This Section needs to be further developed to address the following water quality standard issues: (a) Within the area of the proposed dike, the EMC's water quality standards listed at NCAC .0220 require that the water column be protected for its best usages and remain suitable for aquatic life. The project will completely fill a large area of open saltwater. How can these water quality standards not be violated since the project is designed to eliminate the water column through construction of the dike? (b) The Turbidity standards requires that: "the turbidity in the receiving water shall not exceed 25 NTU." How can open water disposal of dredge spoil realistically be expected to achieve this limit? The burden is on the applicant to show it will be in compliance with water quality standards—and data needs to be presented from other dredging projects to show that there will be no violations of standards. <u>If violations are expected to occur, than the applicants should explore whether or not variances can be granted from these water quality standards—not ignore that violations will be taking place</u>.

(TJ) Response: Obviously, construction of the dike will violate water quality standards in the immediate area of the dike. Due to the relatively low silt content of the inlet shoal material, silt concentrations landward and seaward of the dike will generally range between 6 and 4 ppm respectively. While there is no direct connection between ppm and NTU's, the relatively low silt concentrations should not violate EMC's water quality standards. In any event, this will be taken up with the N.C. Division of Water Quality through the 401 permit process to determine if mitigative measures will be necessary.

13. (TM) Section 8.1 provides a figure of what is anticipated to occur in terms of redistributed sediment once the channel is relocated. As requested in early comments, this projection needs to be based upon more complete historical information. The <u>Inlet Atlas</u> shows that in 1962 the channel was located in approximately the same location as the proposed new channel. Between 1962 and

1973, Figure 3.4 indicates that the main channel had moved and snaked slightly east of the center of the inlet. Even though the channel was still a long way from Bogue Banks, rapid erosion was taking place at the end of Coast Guard road and houses were threatened (and moved). Please explain why Bogue Banks was eroding so rapidly even while the channel was many hundreds of yards west of the island. Could this pattern of redistributed sediment occur as a result of this project? Why or why not?

(TJ) Response: As discussed in response to Comment 7, the erosion on the west end of Bogue Banks during the early to mid 1970's was associated with a secondary flood channel not the primary ebb channel. Formation of a secondary flood channel next to the west end of Bogue Banks will be prevented by the closure of the existing ebb channel.

14. (TM) Economic Benefits of the project should include: a. Please provide data sheets that show the estimated values of private property that will be saved. Do the values reflect current tax values for the waterfront homes at the inlet? Which homes to be saved by the project are likely to still be protected by the time the project gets underway? There also needs to be a clear understanding of how the project will impact private property ownership since many of these existing waterfront lots are now severely eroded and everything below sea level currently belongs to the public; b. Value of Streets and Public Infrastructure Saved - The value of existing public infrastructure (streets, etc.) appears to be based on what they cost to construct. If the private property served by this infrastucture washes away, the Town will have no on-going future expenses associated with operating and maintaining this infrastucture. Also, doesn't the infrastructure have a depreciated value? I would assume that over time this infrastucture is an on-going expense to the Town that is paid for through fees and property taxes--and thus there is really no cost or benefit associated with maintaining it.

(TJ) Response: The value of properties used in the analysis was based on the current tax value not the fair market price. Tax values generally represent depreciated-replacement values. A table listing the value of the individual properties that would be saved during each 2-year increment of the analysis will be provided in the final draft of the report. The logic with regard to the maintenance of the town's infrastructure is not clear. Obviously, once infrastructure is lost, the town would no longer have any expense to maintain it. However, maintenance costs are relatively low and have no bearing on the overall economic impact associated with the lost of buildings and infrastructure.

15. (TM) Economic Costs of the Project should include: a. What is the value of oceanfront properties on Bogue Banks and Dudley's Island that are projected to experience erosion as a result of the channel relocation? Will the oceanfront lots that erode as a result of this project become less valuable? (Would someone be as willing to buy one of these lots if they see that it is eroding?) Since it is projected that the project will cause these oceanfront lots to erode and become smaller, does the town need to obtain permission from each individual landowner to proceed with the

project? What potential financial liabilities exist for the Town when property owners realize the project is causing their lots to erode? If more erosion occurs than has been projected, what could be the potential financial liability for the town property if oceanfront lots become non-conforming in their size? A few years ago Dudley's Island was on the market for $600,000. What impact will this project have on its value?

(TJ) Response: With regard to Dudley Island, moving the channel and closure of the existing channel is predicted to cause a temporary cessation in the erosion that is occurring due to the continued northward growth of the Bogue Banks sand spit. Once the existing channel completely fills and the spit redevelops and moves past the dike, erosion of Dudley Island may begin anew. The time require for these developments to occur could be 5 to 10 years. The oceanfront lots for a distance of 7,500 feet east of Bogue Inlet have been predicted to erode as much as 350 to 400 feet near the inlet to around 10 feet 7,500 feet east of the inlet. Due to the accretion of the shoreline in this area since 1976, the erosion is not expected to cause any substantial risk to existing development in this area. However, erosion of this section of Emerald Isle has been acknowledged from the very beginning of the project plan formulation process and was mentioned during the preliminary interviews by the town during its AE selection process. The acceptance of the project by the affected property owner is something the Town of Emerald Isle will have to address.

16. (TM) Other Economic Costs of the Project need to be estimated: a. If the project results in restrictions on public use of recreational beaches adjacent to the inlet due to permit conditions to protect wildlife resources, what will be the economic impact of this lost recreational use? What will it cost the Town to mitigate lost recreational uses? b. At our PDT meeting several months ago, Cleary predicted that the inlet channel will keep migrating east for the foreseeable future. If that prediction is correct, will movement of the channel to the east cause Bear Island to migrate to the east and grow larger? Existing shoaling now occurring on the east end of Bear Island makes it appear that this eastern migration of Bear Island may now be occurring. The Attached report entitled: <u>Estimating the Total Economic Value of Undeveloped Coastal Barriers in the Coastal Barrier Resources System and the Impact of Development on that Value</u> places economic values on undeveloped barrier islands. Using this report, what will be the economic losses that will result from this project if Bear Island is not allowed to migrate east?

(TJ) Response: During the period from 1973 to the present, the east end of Bear Island eroded while the channel was migrating to the east. Therefore, there does not appear to be a direct correlation between the position of the channel the eastward growth of Bear Island. However, there is a definite relationship between erosion of the ocean shoreline on Bear Island and the channel position. Since 1973, the eastern 7,500-foot section of Bear Island has lost between 40 and 45 acres. Moving the channel to a central location would reverse the shoreline losses and could eventually restore the lost acreage.

17. (TM) If predictions of oceanfront erosion on Bogue Banks are too low, losses of valuable private oceanfront property could escalate catastrophically. Provide projected loss data if erosion estimates are increased by 25%, 50%, 100%, and 200%.

(TJ) Response: The prediction of erosion on the west end of Emerald Isle included average erosion amounts and possible maximum shoreline recessions. The assessment of increased risk of damage due to storm was based on maximum shoreline recessions. While properties located within the westernmost 7,500 feet of Emerald Isle would be subjected to some increased risk of damage during severe coastal storms, the increased risk was low and should not impact property values. Even with the predicted erosion, the width of the beach remaining in front of the buildings would still be larger than the width of beach existing in front of oceanfront structures east of the impact area.

18. (TM) The purpose of the EIS is to give decision-makers complete information upon which to base decisions about whether or not it is prudent to go forward with a project. In this case, decision-makers need a full appreciation of what financial and legal liabilities (costs) might be assumed by the Town or State if the project causes unanticipated impacts (such a more severe oceanfront erosion on Bogue Banks or Bear Island.) The cost/benefit analysis needs to include these potential costs to give decision-makers not only best case, but worse case, scenarios (with probabilities) upon which to make informed judgments. A legal analysis would be helpful that fully explores what legal responsibilities will be assumed by the Town (and others) if this project proceeds and unanticipated harm occurs as a direct result of channel relocation.

(TJ) Response: The EIS will include estimates of possible mitigative measures that the Town of Emerald Isle may have to implement to respond to unexpected developments, including shoreline erosion amounts greater than those predicted.

(TM) These are some preliminary comments based upon my first review of the draft report. As the EIS proceeds, NCCF will circulate documents to people with expertise on certain issues to make sure we can provide useful feedback on a broader range of technical issues.

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON. NORTH CAROLINA 28402-1890

REPLY TO
ATTENTION OF:

July 16, 2003

Regulatory Division

Action ID No. 200100632

JUL 2 4 2003
4500-02
CK. EH

Mr. Eric Hawk
National Marine Fisheries Service
Southeast Regional Office
Protective Resource Division
9721 Executive Center Drive North
St. Petersburg, Florida 33702-2432

Dear Mr. Hawk:

This letter serves to provide your agency with a copy of the revised Biological Assessment (BA), dated June 2003, for the Town of Emerald Isle's proposal to relocate Bogue Inlet Channel, between Emerald Isle and Hammocks Beach State Park (Bear Island, Carteret County, North Carolina. The project purpose is to protect residential homes and town infrastructures, and to place the dredged material on approximately 4.0 miles of beach for nourishment. Please reference your March 3, 2002 letter concerning the project effects on threatened and endangered species pursuant to the Endangered Species Act of 1973 under purview of the National Oceanic and Atmospheric Administration (NOAA) Fisheries.

In your letter, you stated that the proposed action is not likely to adversely affect any Federally-listed species under NOAA Fisheries purview, and concluded our office's consultation responsibilities under Section 7 of the Endangered Species Act. The enclosed revised BA is provided to your office to update you on the progress of the project. Our office acknowledges that if any substantive changes to the project design or methods are made, which may potentially impact any listed species, consultation with your office will be reinitiated.

If there are any elements of the project in the revised BA that raise concerns in your office, please do not hesitate to contact Mr. Mickey Sugg, Wilmington Regulatory Field Office, at (910) 251-4811.

Sincerely,

S. Kenneth Jolly, Chief
Regulatory Division

Enclosure

Copies furnished (w/o enclosure):

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DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

REPLY TO
ATTENTION OF:

July 16, 2003

Regulatory Division

Action ID No. 200100632

JUL 2 4 2003
4500 02
CK, EH

Dr. Garland Purdue
U.S. Fish and Wildlife Service
Post Office Box 33726
Raleigh, North Carolina 27636-3726

Dear Dr. Purdue:

This letter serves to provide your agency with a revised Biological Assessment (BA), dated June 2003, for the Town of Emerald Isle's proposal to relocate Bogue Inlet Channel. The project purpose is to protect residential homes and town infrastructures, and to place the dredged material on approximately 4.0 miles of beach for nourishment. Please reference our December 4, 2002 letter initiating informal consultation for project effects on threatened and endangered species pursuant to the Endangered Species Act of 1973 under purview of US Fish and Wildlife Service.

The enclosed BA has been revised to reflect the recommendations disclosed in your January 31, 2003 letter. We have determined that the dredging and filling of the channel(s) and disposal of material associated with the beach nourishment is likely to adversely affect sea beach amaranth (*Amaranthus pumilus)*; the following nesting sea turtle species: Loggerhead (*Caretta caretta*), Kemp's ridley (*Lepidochelys kempi*), and Green (*Chelonia mydas*); and Piping Plover (*Charadruis melodus*) and Piping Plover Critical Habitat.

As you are aware, our office authorized a 16.8-mile beach nourishment activity along Bogue Banks, which included Emerald Isle as a co-permittee. This permit was issued on October 26, 2001. During the review of the permit, your office stated that the material, extracted from an offshore borrow area, has the potential to impact Federally-listed species of specified nesting turtles and seabeach amaranth. Based on FWS' concerns during informal consultation, the permittees agreed to implement the October 15, 2001 conservation measures and monitoring plan for nesting turtles and seabeach amaranth. Accordingly, these measures and monitoring plan were incorporated in our permit for that nourishment activity. The current project encompasses an approximate 4.0-mile stretch of the 16.8 mile permitted area, and Emerald Isle's proposal has been modified to receive material from the Bogue Inlet Channel Relocation, which contains a more compatible material for the proposed nourishment. A sediment comparison analysis is included in the BA. It is our request that FWS review the October 15, 2001

conservation measures and monitoring plan to determine their applicability to the 4.0-mile stretch of beach that is planned to receive material from the inlet.

If you have questions or comments, they may be addressed to Mr. Mickey Sugg, Wilmington Regulatory Field Office, at (910) 251-4811.

Sincerely,

S. Kenneth Jolly, Chief
Regulatory Division

Enclosure

Copies furnished (without enclosure):

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MEMORANDUM

To: Erin Haight
From: Mike Marshall
Date: July 29, 2003
Subject: Draft EFH Assessment Bogue Inlet

Thank you for the opportunity to review the draft. Below are some comments in addition to adding southern flounder and kingfish.

In section 7.0, the amount of shellfish habitat in area C004 as mapped is 85.22 acres. There are 70.19 acres of V stratum and 15.03 acres of W stratum. It appears that the shellfish density per square meter data from Appendix 1 was used as an area measurement. In addition, in section 7.0, 7.1 and 7.2 the statements that there is a percentage likelihood that a particular stratum will contain either oyster or clams is not accurate. The data indicate that the shellfish population is composed of 100% oysters in stratum V and 98% oysters and 2% clams in stratum W. That means that, on average, a particular sample in these strata could be expected to produce 100% oysters in stratum V and 98% oysters and 2% clams in stratum W. Of primary importance is the fact that in stratum V there are 24.06 shellfish per square meter and 76.82 shellfish per square meter in stratum W. Those figures equate (adjusted to harvestable size) to approximately 320 bushels of shellfish per acre in stratum V and 1025 bushels of shellfish (1013 bu. oysters and 12 bu. clams) per acre in stratum W.

There is also some concern about the statement in 7.2 that indicates bay scallops have the ability to voluntarily move to escape unfavorable environmental conditions. While bay scallops do move about, there should be a differentiation between the ability of bay scallops and finned fish to move. The means of locomotion, lack of direction and short duration of the movements may or may not achieve movement to better environmental conditions.

It would also be advisable to discuss the fact that inlet areas are important blue crab spawning sites in section 9.1, even though if the project stays on schedule it will avoid the primary blue crab spawning months.

Please call if you have any questions.

Cc: Clay Caroon
Trish Murphey

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North .
St. Petersburg, Florida 33702

August 8, 2003

Colonel Charles R. Alexander, Jr.
District Engineer, Wilmington District
Department of the Army, Corps of Engineers
P. O. Box 1890
Wilmington, North Carolina 28402-1890

Attention: Mr. Mickey Sugg

Dear Colonel Alexander:

The National Marine Fisheries Service (NOAA Fisheries) has reviewed the July 2003, Draft Essential Fish Habitat (EFH) Assessment submitted by the Town of Emerald Isle for the proposed Bogue Inlet Channel Relocation Project (**Action ID No 200100632**). The content, organization, and conclusions of the assessment were discussed in considerable detail with Coastal Planning and Engineering, consultants for the Town of Emerald Isle, during a July 28, 2003, conference call. This letter reiterates several of the more significant issues associated with our review of the subject document and discussion with Coastal Planning and Engineering personnel.

Although the Draft EFH Assessment identifies a wide range of species managed by the South and Mid-Atlantic Fisheries Management Councils, NOAA Fisheries, and others, the document should be limited to EFH and associated Federally managed species found in the area to be impacted by the project. In this regard, we note that the assessment lists and discusses species managed by the Atlantic States Marine Fisheries Commission (ASMFC) and the North Carolina Division of Marine Fisheries. While impacts to these species should be described, such descriptions should be confined to other sections of the Environmental Impact Statement (EIS).

The Draft EFH Assessment lists EFH and associated Federally managed species which occur at the project site. An assessment of the potential adverse effects to the listed habitats and species is also provided. As we pointed out in the above referenced conference call, this format is acceptable; however, important information, such as identification of seagrass as a Habitat Area of Particular Concern for species such as red drum is lacking. Consequently, careful review of the document is needed to ensure that the information needed for a full and meaningful impact assessment is provided.

NOAA Fisheries also found sections where certain Federally managed species identified in the document do not utilize the EFH that is under consideration. For example, Section 5.0, ESTUARINE EMERGENT WETLANDS HABITATS (Page 24, Section 5.2) discusses the snapper-grouper complex in connection with estuarine emergent wetlands even though these wetlands are not EFH for this group. We also note that several of the "Effects Determination" sections do not contain sufficient information to support a conclusion that the project would only minimally affect or have no adverse effect on the species identified. The information provided in this section must consider the duration of anticipated impacts as well as impacts to life history stages of managed species. For example, the document should identify and describe affected species and life stages of Federally managed species that utilize the estuarine water column and would be impacted by projected related effects such as elevation of turbidity and sedimentation.

As discussed with Coastal Planning and Engineering personnel, we understand that needed revision of the EFH Assessment may not be completed before release of the Draft EIS. Although we prefer that the assessment be complete at the Draft EIS stage, we are not aware of any requirement for this. We must advise, however, that fulfillment of the EFH consultation requirement cannot be satisfactorily accomplished until an adequate EFH Assessment is provided for our review.

Thank you for the opportunity to review the Draft EFH Assessment. Related comments or questions should be directed to the attention of Mr. Ron Sechler at our Beaufort Facility. He may be reached at 101 Pivers Island Road, Beaufort, North Carolina 28516-9722, or at (252) 728-5090.

Sincerely,

for David H. Rackley

Frederick C. Sutter III
Deputy Regional Administrator

From: Ron Sechler [ron.sechler@noaa.gov]
Sent: Tuesday, August 12, 2003 10:18 AM
To: Erin Haight
Subject: Bogue Inlet EFH Assessment

Erin,
During our telephonic discussion of the Draft EFH Assessment for the Bogue Inlet Channel Relocation project, I indicated that I would discuss the inclusion of DMF, ASMFC information in the EFH document with my supervisor. The guidance received was that the assessment should be limited to Federally managed species. In our response to the COE's request for comments, we identified in general this and other items that need to be addressed for the EFH assessment to adequately address project impacts to EFH. I understand the time constraints associated with this project, but this is an important issue for NOAA Fisheries and one that we've been talking about for a long time. I am available to meet with you at a mutually acceptable time to address any issues associated with the EFH Assessment. However, I recommend that Micky be included in any future discussions of this issue.
Best Regards,

Ron Sechler, Fishery Biologist
NOAA Fisheries
Habitat Conservation Division
101 Pivers Island Road
Beaufort, North Carolina 28516

Phone: 252 728-5090
Email: rsechler@noaa.gov

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890
WILMINGTON, NORTH CAROLINA 28402-1890

REPLY TO
ATTENTION OF:

August 19, 2003

Regulatory Division

AUG 2 5 2003
4520.02
OK FH

Action ID. 200100632

Mr. Frank Rush, Manager
Town of Emerald Isle
7500 Emerald Isle Drive
Emerald Isle, North Carolina 28594-9320

Dear Mr. Rush:

This letter serves to provide the Town of Emerald Isle with National Marine Fisheries Service's (NMFS) comments on the July 2003 Essential Fish Habitat Assessment (EFH) prepared by your agent, Coastal Planning & Engineering. The EFH identifies the potential adverse affects on specific Federally managed fish resources occuring within your proposal to relocate Bogue Inlet Channel and to nourish approximately 4.0 miles of Emerald Isle beach, Emerald Isle, Carteret County, North Carolina. Also, please reference our July 16, 2003 letter.

In response to our July letter to initiate consultation, NMFS has provided our office with their comments in a letter dated August 8, 2003 (copy enclosed). It is strongly recommended that you incorporate these changes into the EFH to ensure adequate review of the potential affects and to expedite the consultation process.

If you have questions or comments, please contact me at (910) 251-4811, Wilmington Regulatory Field Office, and I will assist you in coordinating with the Service.

Sincerely,

Mickey Sugg, Project Manager
Wilmington Regulatory Field Office

Enclosure

Copies Furnished (with enclosure):

Mr. Tom Jarrett
Coastal Planning & Engineering
204 Dorchester Place
Wilmington, North Carolina 28412

Ms. Erin Haight
Coastal Planning & Engineering
2481 N.W. Boca Raton Boulevard
Boca Raton, Florida 33431

Mr. Doug Huggett
Division of Coastal Management
North Carolina Department of
Environment and Natural Resources
1638 Mail Service Center
Raleigh, North Carolina 27699-1638

Copies Furnished (without enclosure):

Mr. Ron Sechler, NOAA Fisheries
101 Pivers Island Road
Beaufort, North Carolina 28516-9722

Mayor Art Schools
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Ms. Tere Barrett
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Hestron Plaza Two
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